

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Omar Wadhwa (Reg. No 64,127) on March 17, 2011.

The application has been amended as follows:

- **Claim 9, line 7:** deleted "adapted to load" and replaced with --that loads--
- **Claim 9, line 16:** deleted "for searching" and replaced with --that searches--
- **Claim 9, line 18:** deleted "for filling" and replaced with --that fills--
- **Claim 11, lines 1-3:** deleted "is further arranged to: free" and replaced with --further frees--
- **Claim 11, line 3:** deleted "write" and replaced with --writes--

- **Claim 20, line 1:** added --non-transitory-- before "computer readable medium"
- **Claim 23, line 12:** deleted "effectively"
- **Claim 31, line 8:** deleted "to search" and replaced with --that searches--
- **Claim 31, line 9:** deleted "to fill" and replaced with --that fills--
- **Claim 31, line 11:** deleted "effectively"
- **Claim 39, line 1:** added --non-transitory-- before "computer readable medium"
- **Claim 39, line 17:** deleted "effectively"
- **Claim 41, line 9:** deleted "to search" and replaced with --that searches--
- **Claim 41, line 11:** deleted "to mark" and replaced with --that marks--
- **Claim 41, line 13:** deleted "perform" and replaced with --performs--

- **Claim 42, line 1:** deleted "computer readable media" and replaced with -- non-transitory computer readable medium--

Allowable Subject Matter

Claims 1-15, 19, 20, and 23-42 are allowed.

The following is an examiner's statement of reasons for allowance:

The prior art of record fails to disclose the combination including at least the limitations of:

(**Claims 1, 9, 19, and 20**) "...loading blocks of the writable vdisk into a memory, the loaded blocks including a writable vdisk indirect block having a plurality of fields, each field storing a valid pointer to a data block or an invalid pointer representing one of a plurality of holes, where each hole instructs the data storage system to examine a corresponding virtual block number pointer in the backing store; loading blocks of the backing store into the memory, the loaded blocks including a backing store indirect block having a plurality of fields, each backing store indirect block field corresponding to a field of the writable vdisk indirect block, one or more backing store indirect block fields having a pointer to a data block; searching each field of the writable vdisk indirect block for a hole; and filling each hole in the writeable vdisk by replacing each invalid pointer with a pointer to the data block referenced by the corresponding backing store indirect block field to update the writable vdisk to reference both the data which is unchanged since the writable vdisk was created and the data which has been changed since the writable vdisk was created."

(**Claims 23, 31, and 39**) "...searching each field of the writable vdisk for a hole; and filling each hole in the writable vdisk by replacing each hole in the writable vdisk to point to the data block referenced by the corresponding backing store indirect block to fill each hole of the writeable vdisk with the data block and thus update the writable vdisk to reference both the data which is unchanged since the writable vdisk was created and the data which has been changed since the writable vdisk was created."

(**Claims 40-42**) "...searching, by a background task process, each field of the writable vdisk for a hole; for each hole in the writeable vdisk, marking as dirty the corresponding data block pointed to by the backing store indirect block without modifying the corresponding data block; and performing a write allocation to replace each hole in the writable vdisk to point to the data block marked as dirty and referenced by the corresponding backing store indirect block to update the writable vdisk to reference both the data which is unchanged since the writable vdisk was created and the data which has been changed since the writable vdisk was created."

As dependent **claims 1-8, 10-15, 24-30, and 32-38** depend from an allowable base claim, they are at least allowable for the same reasons.

Any comments considered necessary by Applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arpan P. Savla whose telephone number is (571) 272-1077. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sanjiv Shah can be reached on (571) 272-4098. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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March 17, 2011

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